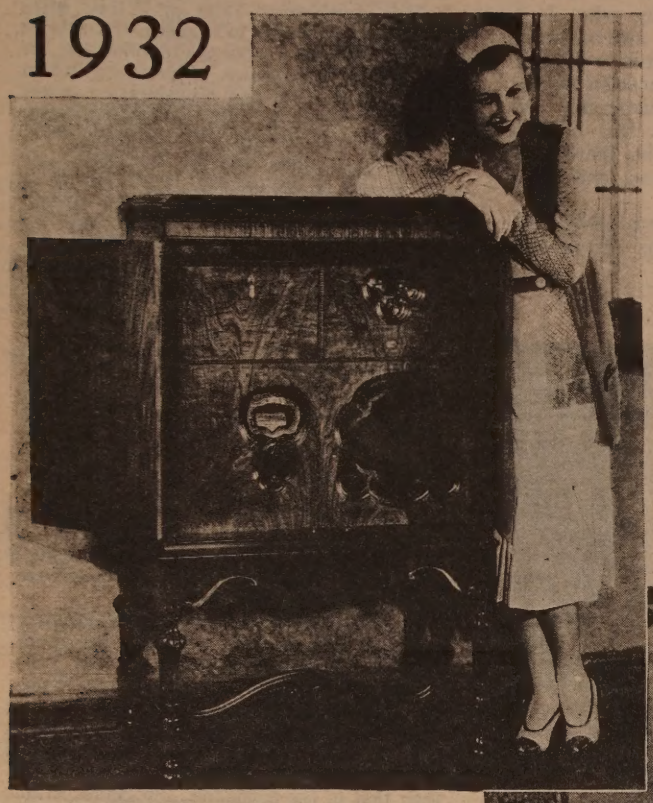
VOL.XV No.5 MAY 1986 SECOND CLASS POSTAGE PAID AT DALLAS, TEXAS POSTAL IDENTIFICATION
PUBLISHED BY JIM CRANSHAW, N5FSL MONTHLY EXCEPT JULY AND AUGUST STATEMENT, PAGE 2
PRICE $10.00 YEARLY SINGLE ISSUE $1.50 PUBLISHED SINCE 1972
(214) 286-1673

THE HORN SPEAKER



Typical designs for radio receivers of the last year or two include the latest improvements in radio technique, including both radio and phonograph in a cabinet suitable for any home

FOURTEEN YEARS OF

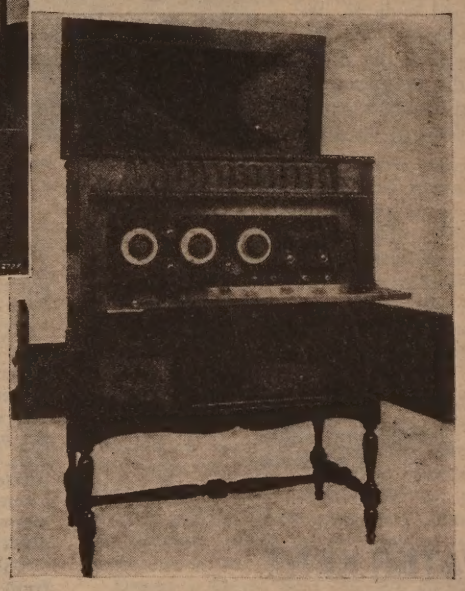
RADIO'S EVOLUTION

By E. L. Bragdon*

FOURTEEN years is not a long period of time as generations come and go, yet within the compass of these years the world has seen the birth of a new industry—the slow but persistent early progress of the radio enterprise and an awe-inspiring pace in development which places that industry among the wonders of the age. With these deeds to look back upon, RADIO NEWS should experience a feeling of pride in the fact that it fostered the start, heralded the accomplishments and shared in the returns. A child fourteen years of age is but beginning a useful existence. This publication of the same age has experienced all the benefits as well as the hardships that would ordinarily be encountered only in a span many times longer than this. And the present phase apparently is but the beginning of other phases that will shine more brilliantly and profitably and with far greater satisfaction.

FORERUNNERS

Above we see a high-powered long-distance receiver in an early type of cabinet. Right: One of the first efforts to put a receiver in a cabinet, with the loud-speaker horn attached to the lid and battery compartments below



In a book written by R. P. Clarkson, and aptly titled by him "The Historical Background of Radio," the author quotes two scientists as follows:

"The day will come when we are all forgotten, when copper wires, gutta-percha covers and iron bands are only to be found in museums, that a person who wishes to speak to a friend, but does not know where he is, will call with an electrical voice which will be heard only by him who has a similarly tuned electrical ear. He will cry 'Where are you?' and the answer will sound in his ear, 'I am in the depths of a mine, on the summit of the Andes, or on the broad ocean.' Or perhaps no voice will reply and he will know that his friend is dead."

Thus spoke W. E. Ayrton many, many years ago. Again a quotation, this time from a publication of 1898:

"It (broadcasting) might be desirable for the purpose of following the day's happenings, such as army maneuvers, for reporting races and other sporting events, and generally for all important matters occurring beyond the range of the permanent lines (of communication)."

This was the forecast of Sir Oliver Lodge, whose name is linked with scientific developments of the highest magnitude.

Broadcasting, of course, in the modern sense is a modern development but not a modern idea. It required a groundwork of knowledge for these laboratory wizards to clear away

RADIO PIONEERS

Dr. Lee DeForest with his first radio vacuum tube, and, above, Dr. Frank Conrad, pioneer broadcaster

*Radio Editor, *The New York Sun.*

Around the Dial

By THE DIAL TWISTER

FINDING OLD SETS

Have you tried a business card that announces to one and/or all about your collecting vintage electronic or sound items? Passing out cards can add to your possibilities of finding more old radios, phonographs or associated items. Many experienced collectors say that an appropriate picture on the calling card helps explain the style of merchandise that fits your collecting efforts.

Consider how frequently the image of something being old in one person's mind, especially a seller, but not really old old in your scheme of things. For instance, on the card of these collectors, who really gather up the coveted items, rare sets are emphasized on their calling cards. Since many collectors use interesting designs of drawing, typography and layout, I am always eager to receive cards for my collection of them.

IN THE RED FOR FREE

I read or hear stories about ANTIQUE RADIO CLASSIFIED operating in the "red." Since we need all the help we can get in stirring up the bushes for old radios, I suggest that the publisher of that publication stop offering free ads. It is difficult to understand the purpose of giving free space, if one is losing money. Since no subscribers has ever complained to us about the cost of word ads and not to exert any competition with free ads, THE HORN SPEAKER will return to the old policy of

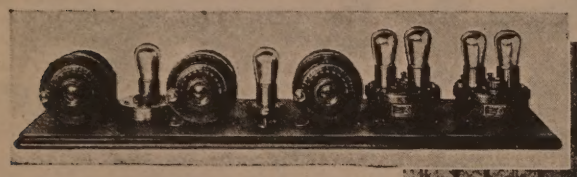
(See the Dial, page 3.)

the walls of ignorance and mystery before the day foreseen by Ayrton should come to pass.

To label the researches of engineers, physicists and field workers in the early part of this century as "mere groundwork" of the world-wide network of communication as we know it today does not detract one whit from their glory. Without their conquering of stubborn problems, many of them so discouraging in aspect that they must have seemed insurmountable, the world would be poorer today by many billions of dollars in material things and trillions of hours of domestic enjoyment, not to mention the welding together of international viewpoints, all due to the universal appeal of broadcasting.

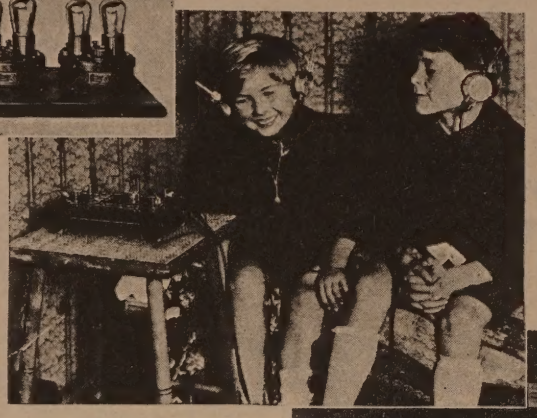
This little tribute to fourteen years of broadcasting might well be carried through to its end without recalling the years that preceded them, but a brief mention inevitably makes the story more complete and understandable.

Back in 1901, Marconi flew his kite over wind-swept Glace Bay and brought down a different kind of lightning. The act was heralded as one of the greatest accomplishments of all time. In the decade that followed, a long list of workers continued the enthusiasm engendered by the Marconi achievement. Gradually the crude mechanics of reception were refined and new elements added which displaced the old. De Forest took a glass bulb and inserted a little piece of metal in a space left unfilled by J. J. Fleming. In that one stride, broadcasting was drawn within the limits of practicability. The war altered the picture at this point, and radio took its place in the ranks alongside the other engines of offense and defense. At the conclusion of hostilities, engineers who had been forced to untoward ends to develop communication through the ether immediately saw the great possibilities of the agency as a supplement to the other great communication systems. At this point radio broadcasting of entertainment, information and education had its birth. And at this same point RADIO NEWS entered the scene as an aide, a counselor, a contemporary history and a reference source.



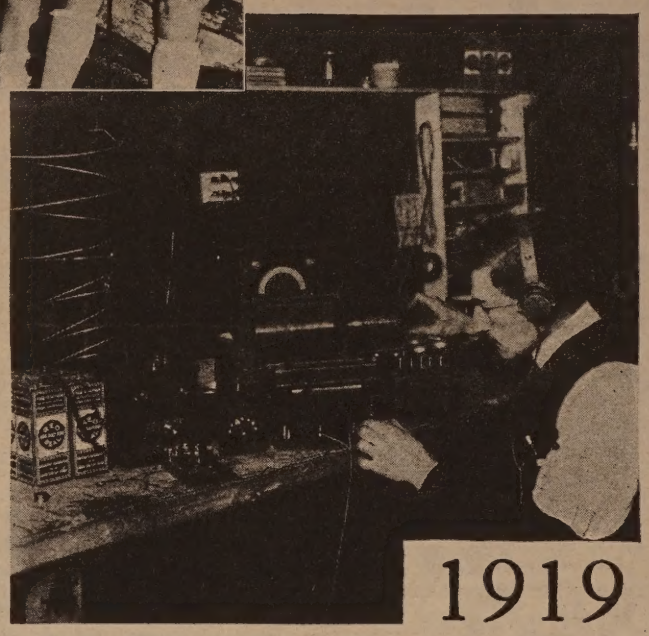
EARLY SIX-TUBE SET

This receiver, in which the parts and tubes were mounted on a breadboard layout, was once considered the latest word in home radio reception apparatus



MEMORIES

Some of us do not forget the first crystal sets, as shown above, that brought such a thrill to young and old alike. Right: Fewer remember the good old days when radio was a collection of batteries, mysterious looking coils and parts in scrambled confusion all over the experimenter's table



1919

From the moment that the late Harry P. Davis and Frank Conrad, working before a crude transmitter in a garage at East Liberty, Pa., voiced the returns of the Harding-Cox election, not for the edification of millions of listeners but for the curiosity of two score of friends who had been provided with special receivers, our daily life was threatened with changes. If the prosaic figures of a presidential election could be made so interesting that people would listen to them, then there must be a demand for the same system expanded and refined. The astonishing fact that a family could sit in comfort in its home, there to be supplied with happenings of the day, musical selections and even addresses by notable men whose messages were sought after, swept over the country like the news of a staggering earthquake. The demand for receivers sprang up and an industry was born. The first part of Oliver Lodge's prophecy was coming true, exactly twenty years after it was uttered. But Ayrton, in thought at least, was still ahead of the art.

Who is there today who does not remember the awe-inspiring collections of coils, tubes and wires that preceded any concerted manufacturing move? Historians are one in agreeing that this era of home building was the spark-plug that energized inventors and engineers.

There is an erroneous belief that the attic inventor was for several years the sole producer of radio sets. But this is not quite the truth. Almost coincident with the first stations there were complete receivers, but their high cost limited their sales. These early instruments were plain box-like affairs with, first, three tubes, then four and finally five. The tubes were fed from storage batteries, because no one had yet refined the battery eliminator. Selectivity was incidental; sensitivity depended almost entirely on the luck of the owner in getting good tubes. Yet, despite these handicaps, the public expressed a demand for radio receivers that astonished industry and created a horde of manufacturing organizations. The radio industry had passed the childhood stage.

The next phase was one of invention. Not from the extensive research laboratories of the great corporations, but from the kitchens and cellars of the individual and the private workshops of smaller firms, came a constant stream of improvements. A grid leak ceased to be a crude pencil mark on a strip of fibre and became a carefully calibrated thread of resistance material in a glass tube. Transformers were improved and the voices of orators no longer sounded alike. Loudspeakers graduated from a combination of earphone and horn into a matched assembly of magnetic unit and air column. Refinements in accessories made it certain that the receiver could be depended upon to function, day after day and week after week. By 1923, the plaything had become an instrument, crude, of course, as compared with those of today, but imposing enough to meet all the requirements of the public except one—electrician.

In 1924, when RADIO NEWS was but six years of age, its pages carried the first stories of socket-power-operated receivers. The ponderous storage battery had done its work, and the small, compact dry cells were to be replaced. All that one needed was a connection to any handy electric-light socket. The toy stage had definitely passed and in its place came the era of utility.

Professor Hazeltine contributed his method of counterbalancing the sources of squeals, and there was no longer a definite limitation to the number of tubes that could be used.

This development came at a time when the amazing increase in broadcasting stations seemed about to curtail the usefulness of the set, due to interference. More tubes meant greater selectivity, and electrification meant that the increase in tubes could be accommodated without depleting the source of power.

During all this time the loudspeaker sat at one side of the receiver or perched on its top like an added thought—albeit a mighty essential one. Designers (with vision) saw the desirability of making the radio set a complete instrument, fit to take its place in the room alongside the piano or any other piece of furniture. Consoles appeared on the market with the speakers built into some portion of the unit. The magnetic speaker was soon replaced by the dynamic speaker; early tubes were outmoded by newer types with less hum and greater volume. Tube experts realized that the same tube could not be expected to perform efficiently in radio-frequency, detector and power stages, and their attention to these special conditions soon bore fruit. The result was an improvement in quality that brought thousands of doubting Thomases to radio stores. Undoubtedly, as we see them in retrospect, these were the halcyon days of radio.

On the transmission end of the industry, engineers had not been nodding. The rapid advance of receiving technique had produced instruments that were able to reproduce better quality than stations were actually transmitting. *But not for long!* Transmission engineers soon realized that radio could not tolerate quality no better than that of the telephone. Programs, to be acceptable, must first of all be lifelike. Orchestras must sound like orchestras; the voices of speakers must be hurtled through the air and recreated in homes with all their original timbre, intonations and nuances of tone. This called for a complete redesign of equipment, which was not long in coming, so that after ten years of broadcasting, research workers were able to point to their transmitters and say: "We are transmitting more than your receivers will recreate." And that, today, in the majority of instances, is a condition that still exists.

There is no place here to comment on the so-called "American system" of broadcasting. It has its adherents even as it has its opponents. The fact remains that commercial interests have made it possible for the highest-paid stars of theatre, opera, screen and concert stage to come into your homes and entertain you with their priceless talents. Their voices are in the air through all the hours of the day, to be enjoyed by anyone who possesses the proper combination of tubes and coils to reach out and get them.

But radio has not been limited to the relatively simple task of corralling artists in a studio, there to send their voices far and wide. To prevent satiety, there must always be variety, and the broadcasting interests have not hesitated to descend into the ground, ascend to the upper air to cross continents and oceans to satisfy the ever-broadening desires of the millions of listeners who comprise this vast audience. Microphones have been lowered to mines and tunnels; they have been carried in planes during mimic warfare and on cross-country flights; they have been placed on the dais before statesmen of all countries, and war

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POSTAL IDENTIFICATION STATEMENT— THE HORN SPEAKER (USPS) 956120) is published monthly, except July and August by Jim Cranshaw, 9820 Silver Meadow Drive, Dallas, Texas 75217. Subscription rates are $10.00 yearly and $17.00 for two years. Second class postage paid at Dallas, Texas. POSTMASTER: Please send address changes to; THE HORN SPEAKER, P. O. Box 53012, Dallas, TX 75253

lords of the Orient have used them to bring their messages five thousands of miles to this country.

In 1932, the fourteenth year of broadcasting, those prophetic utterances of Ayrton have at last been realized. You may claim that it is not yet possible for the householder to step to his receiver and call his friend, wherever he may be. But this is not directly a limitation of radio. Does not the amateur converse with his friends on the other side of the world? Is it not possible for any man to enter a telephone booth and by a combination of wire and radio hold conversation with the object of his interest in Buenos Aires, London or Honolulu? Do not these accomplishments meet in a sense the prophecies made over three decades ago?

So much for the present. What of the future? No man, unless he be an Ayrton or a Lodge, can determine with accuracy what form broadcasting will take in the years ahead. But there is television, with its great hopes and promises. As an adjunct to mere sound, it will add a missing quality to home entertainment. An artist *heard* is only partially appreciated; the same performer *heard* and *seen* must have twice the appeal. But just how soon this accessory to sound broadcasting will be offered as a market commodity, no one knows with certainty. Is it not sufficient at this time to realize that it is coming and that its arrival can scarcely fail to herald the beginning of another fourteen-year era of wonderful accomplishment, in all of which RADIO NEWS will participate just as it has shared in the fourteen years that have led up to the day?

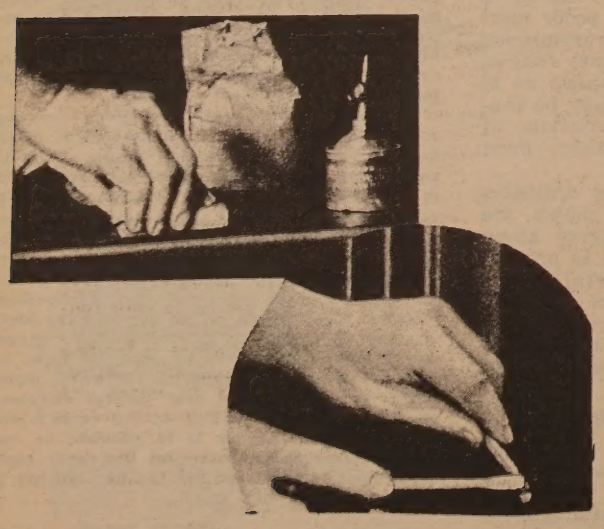
RADIO NEWS FOR AUGUST, 1932

the Dial

charging for all of the classified ad— especially since the rates of mailing publications with a circulation of less than 5,000 has about doubled, lately.

COPYRIGHT LISTINGS

Interesting to view is the microfilmed copyright listings found in the large city libraries. Even though in some cases only a date is listed, many radio broadcasts are listed with titles, such as, SUSPENSE, LUX RADIO THEATRE, THE GREEN HORNET, THE LONE RANGER, etc.



Mr. Fraser, who was once a furniture inspector for the United States Government, shows how to rub a blemish with pumice stone and oil (at left) and how to use shellac stick (below)

Fillers for Cracks and Holes — Polishing Blemishes

To restore radios, phonographs, etc., to their original sales condition, one must learn to play surgeon to the woodwork. Chelsea Fraser in Popular Science Monthly October 1927, describes how craftsmen repaired blemishes when the phonograph and radios of the 20's were new or at least newer. Reading from a contemporary the reader can easily understand how a 1928 Norden Hauck of 1928 would have had its woodwork repaired.

How a dent or crack is filled by melting a shellac stick into it, just as sealing wax is applied. Only a few inexpensive materials are needed for touching up all ordinary types of furniture scars

You may be surprised to learn that nearly every tool you are likely to need for touching up your furniture can be found in the ordinary home. As a burning iron, nothing can surpass a common, medium-sized screw driver. For applying stains, liquid shellac and varnish, you will need a hair-line artist's brush, also one of medium size, costing five or ten cents each.

A good rubbing block can be made from an old felt hat. Cut out a strip of the brim about 6 in. long and 2 in. wide and wrap this around a small wooden block.

So much for the tools. Now for the materials. At a paint store buy 1 oz. each of walnut-brown and mahogany-red aniline powders, soluble in water. If the dealer does not have them, get household dyes for *wool* in these four colors: brown or seal brown; turkey red, cardinal red or garnet; yellow or orange, and black. Almost any finish can be imitated closely enough for patch work by blending two or more of these colors. Do not get dyes for cotton as they lack the depth and brilliance of the other kind when applied to wood.

FROM your paint dealer obtain a small can of turkey burnt umber ground in oil, ½ pt. liquid orange shellac, ¼ lb. shellac flakes, 1 lb. whiting, ½ lb. FF pumice powder, and (if you haven't them at home) ½ pt. each of alcohol and turpentine, also purchase ¼ pt. liquid glue. A small can of asphaltum varnish is also worth getting; it is an excellent oil stain for varying shades of brown when diluted with turpentine and it imparts a noticeable sheen to the wood.

With this outfit you are equipped to do any common touch-up job.

One of the commonest methods of filling deep bruises and dents is to use what is termed "stick shellac." If your paint dealer carries a stock of these sticks, you can buy one for a few cents to match any ordinary furniture finish. The smaller stores often do not have them, so that is why I have advised you to buy shellac flakes. With them you can make your own sticks.

Heat a handful of the shellac flakes in the cover of a coffee can or other receptacle. As they begin to melt, stir them with a screw driver or the handle of an old spoon to keep them from burning on the bottom. While stirring, pour in a little aniline stain powder of the color you wish the stick to be and blend this thoroughly with the simmering shellac. You may have to put in two different colors in order to secure the desired shade.

As soon as the mixture suits you, pick the cover up with a pair of pliers and scrape the soft mass out on to a hand saw blade. It will cool rapidly. While it is still pliable, scoop it up with the fingers and roll it briskly between the palms of the hands to form a long pencil-like stick. Lay the stick down upon the saw and in a minute the shellac will be as hard and brittle as an icicle.

To use the stick, heat a screw driver point enough to melt the shellac without causing it to boil. Hold the stick at the edge of the cavity, as illustrated above, with the screw driver point bearing gently down upon the corner of the shellac, much as you would solder metal parts, and force the hole full.

Damp a finger and quickly pack the soft shellac down. Burn on a little more, and pack again, until the filling rounds up slightly above the surface. Be careful all this time not to let the hot iron touch the surrounding varnished surface. Then with a knife or chisel held flat, carefully pare away the surplus shellac, and smooth with the rubbing felt, as described a little later.

The correct way of filling a hole or crack

Sealing wax also can be used as a filler. This is to be had in various colors at stationery stores.

Another excellent filling agent is what is called "gesso." In fact, gesso makes a tougher and more durable filler than shellac stick. To make a small batch, fill a tablespoon with liquid glue, and pour this into any small vessel, such as the cover of a baking powder can. Add an equal amount of whiting. When the two substances are well blended, put in a little aniline stain powder of the desired color and stir until the composition is of a uniform color throughout. The gesso is then ready to apply.

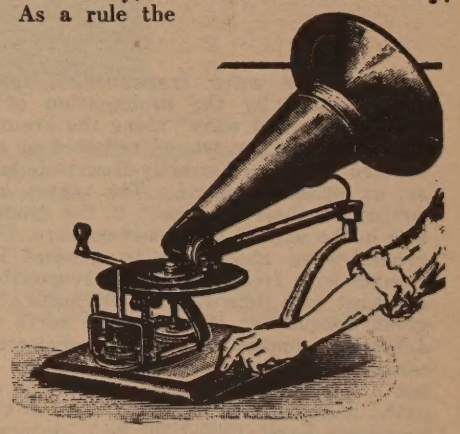
Take up a small quantity on the corner of a putty knife or table knife and press it firmly into the cavity. Pack the hole full, rounding it over a trifle to allow for shrinkage. With a damp cloth pulled over the forefinger, carefully remove any of the filler that may have gotten on the surrounding varnished surface. By the next morning the gesso will have hardened until it is like rock, yet with a sharp knife or chisel you can easily shave off the surplus. Pumice and oil are used for the final smoothing.

YOU can obtain in many hardware and paint stores a plastic wood filler that is excellent for repair work. It is probably best used in the natural color, which is light, and then tinted after it has been dressed smooth. It hardens very quickly and, because of its adhesive qualities and strength, can be used in building up broken corners and replacing missing bits of carving or molding. It can be modeled into any shape with the fingers.

Still another good filler is made from glue and wood dust. Mark that I do not say *sawdust*, which is too coarse. Take a cabinet file and a piece of scrap wood of a kind to match in color the part containing the cavity. Fasten the wood in the vise and stretch a cloth on the floor beneath. File away like a good fellow and in a little while you will have a sufficient deposit.

Place the wood dust on a scrap block or in a saucer, and pour on enough hot or cold glue to make a paste. Then add sufficient aniline stain powder to produce a color to match the furniture exactly. Use it like gesso.

Such blemishes as scuffs and shallow scratches occur more frequently to furniture than any other kinds of damage, and, fortunately, are the easiest to remedy. As a rule the

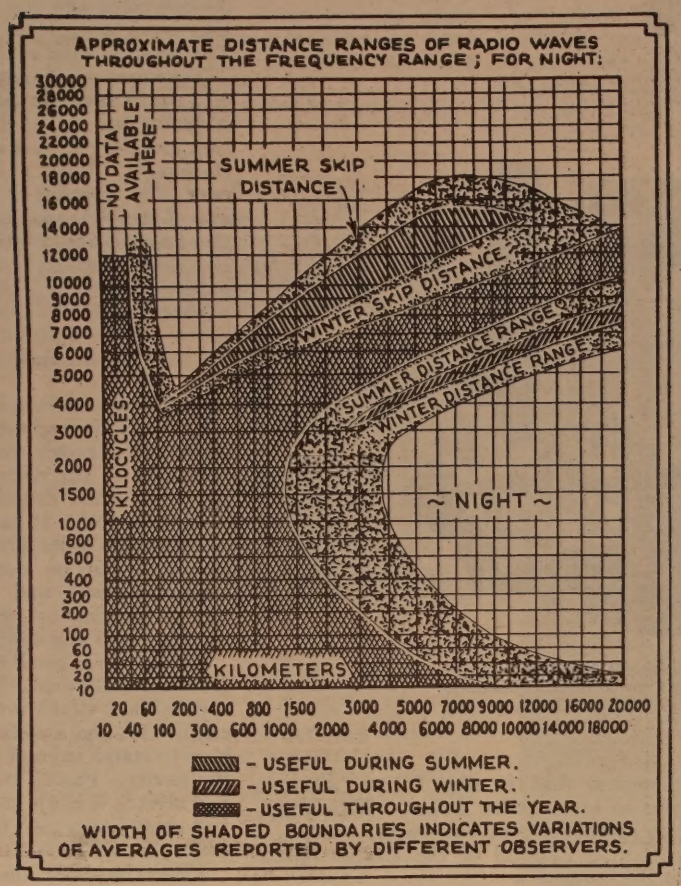


varnish is scored sufficiently to dull it or give it a white appearance, the latter being most noticeable in pieces that have been coated with a cheap grade of varnish.

If your examination convinces you that the stain coat has not been cut through, all you will have to do is to sprinkle a few drops of sewing-machine oil or olive oil on the damaged surface, shake a little pumice powder on the same place, and rub the two ingredients with the felt block previously described. If the felt absorbs the oil, add more oil. Don't rub too long, as you may cut entirely through the varnish. A dozen firm shoves back and forth should do the work. Some jobs of this nature you can efface entirely; others will always show a little on close inspection.

The same method is used after the other filling treatments previously mentioned.

How Far On What K-C?


APPROXIMATE DISTANCE RANGES OF RADIO WAVES THROUGHOUT THE FREQUENCY RANGE; FOR NIGHT.
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~ NIGHT ~
KILOCYCLES
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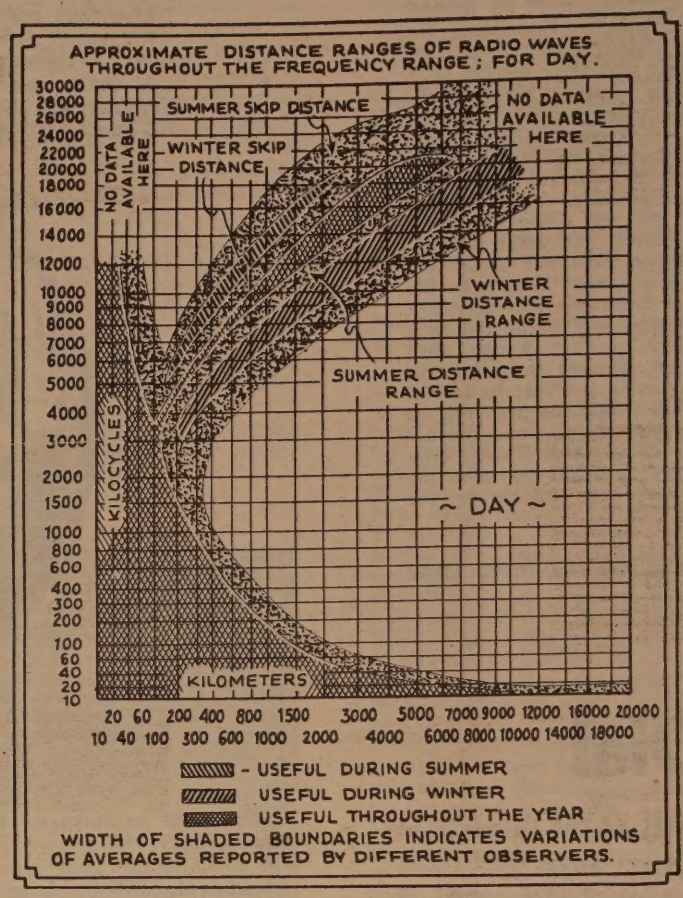
- USEFUL DURING SUMMER.
- USEFUL DURING WINTER.
- USEFUL THROUGHOUT THE YEAR.
WIDTH OF SHADED BOUNDARIES INDICATES VARIATIONS OF AVERAGES REPORTED BY DIFFERENT OBSERVERS.


APPROXIMATE DISTANCE RANGES OF RADIO WAVES THROUGHOUT THE FREQUENCY RANGE; FOR DAY.
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SUMMER SKIP DISTANCE
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- USEFUL DURING SUMMER
USEFUL DURING WINTER
USEFUL THROUGHOUT THE YEAR
WIDTH OF SHADED BOUNDARIES INDICATES VARIATIONS OF AVERAGES REPORTED BY DIFFERENT OBSERVERS.

RADIO wave transmission takes place by the propagation of a "ground wave" along the ground, or a "sky wave" reflected or refracted from the Kennelly-Heaviside layer, or by both means. The waves are subject to absorption, both in the ground and in the ionized upper atmosphere. The ground-wave absorption in general increases with frequency and is reasonably constant with time over a given path at a given frequency; it varies for earth of different conductivities and dielectric constants. The sky-wave absorption is not a constant with time, frequency, or path; it appears to be a maximum in the broadcast band (550-1500 kc.), decreasing with change of frequency in either direction. In the daytime this absorption of the sky wave is so great that there is practically no sky wave, from frequencies somewhat below to somewhat above the broadcast band, the specific limits varying with season. Hence sky-wave propagation in the daytime is only appreciable in the lower and higher frequency ranges. During the night, however, sky-wave propagation takes place on all except extremely high frequencies. Sky-wave propagation is subject to material variations, dependent upon conditions and changes in the ionization of the Kennelly-Heaviside layer. Besides daily variation of daylight and darkness, factors such as latitude, season, magnetic storms, and solar disturbances, have been found to have effects upon this ionization. These changes in ionization result in wide variations in the transmission of

The accompanying charts which were prepared by the U. S. Bureau of Standards, Washington, D. C., show the variation in range or distance covered at different seasons with various wavelengths or frequencies.

sky waves from hour to hour, day to day, and year to year. At the higher frequencies, received field intensities for a given season and frequency may vary as much as 1 to 10 from one year to another.

Important Rôle of the "Sky Wave"

At the higher frequencies, reception at great distances is due entirely to the sky wave. Above a certain frequency, however, which may be as low as 4000 kc. (see attached graphs), no appreciable portion of the sky-wave radiation is reflected back to earth from the Kennelly-Heaviside layer in a certain zone surrounding the transmitter. In the area bounded by the inner edge of this skipped zone, the received wave may be composed of both ground wave and sky wave (the sky wave being appreciable on frequencies up to about 6000 kc. in the summer and 12,000 kc. in the winter); the sky wave intensity in this area is ordinarily much less at night than in the day. The outer boundary of the skipped zone is often called the skip distance. The skip distance increases with frequency, and varies diurnally and seasonally. Beyond the skip distance, the sky-wave radiation is received with useful intensity.

With present knowledge of propagation conditions, it is impossible to postulate any formulas or make any tables or charts which could be used to determine distance range over any given path accurately. The attached graphs give average distance ranges as observed by a number of experimenters* to occur most frequently over a number of transmission paths. Through certain frequency ranges, available data were so incomplete as to require extrapolation which may be considerably in error. Wide variations of distance range and skip distance must be accepted as normal.

The scales of abscissas and ordinates are cubical, (*i. e.*, numbers shown are proportional to cube of distance along scale, or, distance along scale is proportional to cube root of numbers). This was chosen because it spaces the data satisfactorily. A linear scale would crowd the low values too much and a logarithmic scale would crowd the high values too much.

Graphs Show Practical Range

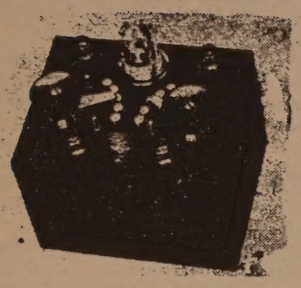
The graphs show the limits of distance over which practical communication is possible. They are based on the lowest field intensity which permits practical reception in the presence of actual background noise. For the broadcasting frequencies this does not mean satisfactory program reception. The limiting field intensity is taken to be 10 microvolts per meter for frequencies up to 2,000 kc., decreasing from this value at 2,000 kc. to about 1 microvolt per meter at 20,000 kc. When atmospherics or other sources of interference are great, *e.g.*, in the tropics, much larger received field intensities are required and the distance ranges are less. The graphs assume the use of about 5 kilowatts radiated power, and non-directional antennas. For transmission over a given path, received field intensity is proportional to the square root of radiated power, but there is no simple relation between distance range and either radiated power or received field intensity.

Separate graph sheets are given for day and night transmission. Above about 3,000 kc., as shown, the distance ranges (and in most cases also the skip distances) are greater in the winter than in the summer. The distance ranges in spring and autumn are intermediate between the limits shown for summer and winter. In general, the distance ranges for paths which lie partly in day and partly in night portions of the globe are intermediate between those shown in the day and the night graphs. For such paths, the distance ranges are greater than would be expected from inspection of the day graph, as the waves under these conditions travel over greater distances in the illuminated portion of the earth's surface; for this reason it is possible to use a lower frequency for a part day, part night path than is indicated for the day portion of the path on the day graph.

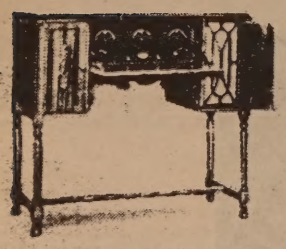
The distance ranges given in the graphs are the distances for reliable reception; they are not the limits of distance at which interference can be caused. A field intensity sufficient to cause troublesome interference may be produced at a much greater distance than the maximum distance of reliable reception.

1925 radios continued from last month

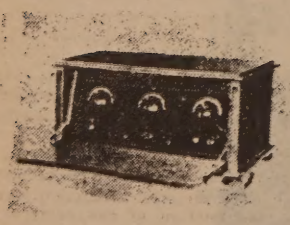
TRADE NAME: "Crosley Trirdyn."
MODEL: Special.
TYPE: Armstrong regenerative; reflex and tuned radio frequency.
TUBES: Three.
BATTERIES: Not furnished, but may be contained in cabinet.
CONTROLS: Three.
AERIAL: Outdoor or indoor.
PRICE: $60.00 without accessories.
MANUFACTURER'S NAME: Crosley Radio Corp.



TRADE NAME: Crystal Receiver.
TYPE: Fixed crystal receiver, no tubes or batteries required.
CONTROLS: Two.
AERIAL: Outdoor.
PRICE: $6.00 without accessories.
MANUFACTURER'S NAME: Bird Radio Corp.



TRADE NAME: "Day-Fan."
MODEL: Daytonia.
TYPE: Two radio, detector and two audio; duplex circuit; complete with "A" and "B" batteries and special recharging apparatus.
BATTERIES: "A" and "B."
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $285.00 complete except tubes.
MANUFACTURER'S NAME: Dayton Fan and Motor Company.



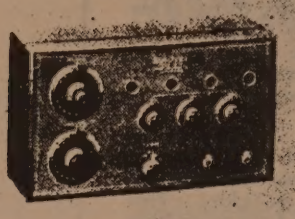
TRADE NAME: "Day-Fan."
MODEL: Dayola.
TYPE: Two radio, detector and two audio; duplex circuit.
BATTERIES: "A" and "B" needed.
CONTROLS: Three.
AERIAL: Inside or outside.
PRICE: $125.00 without accessories.
MANUFACTURER'S NAME: Dayton Fan and Motor Company.

TRADE NAME: Deresnadyne.
MODEL: De luxe.
TYPE: Two stages of tuned radio frequency amplification detector, two stages of low ratio audio frequency amplification.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Outdoor, indoor.
PRICE: $165 without accessories.
MANUFACTURER'S NAME: A. R. C. Andrews.

TRADE NAME: Deresnadyne.
MODEL: Standard.
TYPE: Tuned radio frequency, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Outside or inside.
PRICE: $150.00 without accessories.
MANUFACTURER'S NAME: A. R. C. Andrews.

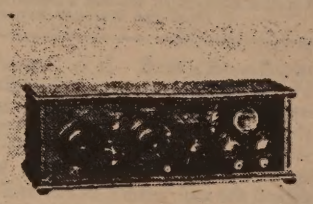
TRADE NAME: "Duck."
MODEL: Five tuned super.
TYPE: Tuned radio frequency, detector and two audio.
TUBES: Five.
BATTERIES: "A" and "B" needed.
CONTROLS: Four.
AERIAL: Inside or outside.
PRICE: $125.00 without accessories.
MANUFACTURER'S NAME: Wm. B. Duck Company.

TRADE NAME: "Duo-Dyne Receiver."
MODEL: 770.
TYPE: One stage of tuned radio frequency amplification, detector and two stages of audio frequency amplification.
TUBES: Four.
BATTERIES: None furnished
CONTROLS: Two.
AERIAL: Indoor or outdoor.
PRICE: $55.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.



TRADE NAME: "Duo-Dyne Receiver."
MODEL: 775
TYPE: One stage of tuned radio frequency amplification, detector and two stages of audio frequency amplification.
TUBES: Four.
BATTERIES: None furnished.
CONTROLS: Two.
AERIAL: Indoor or outdoor.
PRICE: $80.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.

TRADE NAME: "Duo-Dyne Receiver."
MODEL: 880.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $100.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.



TRADE NAME: "Duo-Dyne Receiver."
MODEL: 815.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Four.
AERIAL: Outdoor or indoor.
PRICE: $110.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.

TRADE NAME: "Duo-Dyne Receiver."
MODEL: 900.
TYPE: Two radio, detector and two audio.
TUBES: Five.
BATTERIES: None furnished.
CONTROLS: Three.
AERIAL: Indoor or outdoor.
PRICE: $135.00 without accessories.
MANUFACTURER'S NAME: Globe Electric Company.

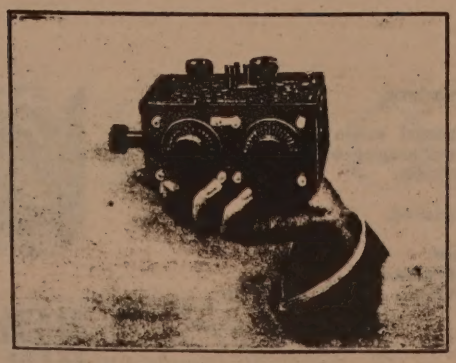
Continued

THE MICRODION

Here is a French novelty which has just been placed on the market over there. This little set, which is extremely compact, is of the regenerative type and the weight and size of it make it a really practical receiver which may be carried anywhere in a small bag.

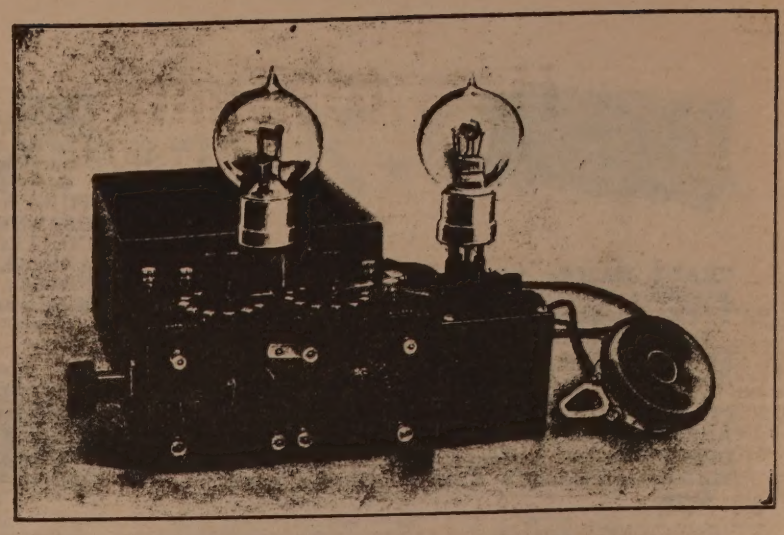
The regenerative effect is obtained by means of a special iron core which may be introduced more or less inside of a specially designed inductance, acting as tickler. This iron core is controlled by the knob protruding through the side of the cabinet, upon which are mounted two switches and two variable condensers, as well as the vacuum tube sockets and binding posts for antenna, ground and phones. With this small receiver a special vacuum tube taking only .13 ampere is used. This is furnished with special dry batteries for the filament and plate current.

If desired, one or two stages of amplification may be added to the set and by the use of low consumption vacuum tubes, a small dry battery is only necessary for the filaments of all the tubes. One of the phonographs below shows the receiver to which is connected a one-stage audio frequency amplifier, enclosed in a small box connected on the right; the batteries being enclosed in the



little bag behind the receiver and amplifier.

Such an outfit, including the batteries weighs only 9 pounds.



This Ultra Compact Regenerative Receiver of French Make May Be Carried Everywhere, as It Weighs Only Seven Pounds, Including the Batteries, Which Are of the Dry Type. The Vacuum Tubes Are Especially Designed, and Consume only 0.13 Ampere for the Filament. On the Right the Picture Shows the Set with a One-Stage Amplifier Connected to It.

Radio News for August, 1922

Radio News for August, 1922

Radiophone Broadcasting Station Installed by Texas Newspaper

THE Fort Worth (Texas) *Record* is the pioneer newspaper in the radio field in the Southwest. It is the first paper west of the Mississippi to install its own radiophone broadcasting station. The set is of 200-watt input, with a range of from one to two thousand miles, and is used for broadcasting weather forecasts, crop and market reports, baseball scores, police bulletins, concerts, etc.

The set was purchased through a Fort Worth firm and all work on it was done by

A Texas Newspaper Station Broadcasting Entertainment and Weather Reports.

the *Record's* staff. It is located on the roof of the *Record's* five-story building, where remodeled windmill towers are used to carry the antenna 125' above the ground. The station is regularly licensed by the Government for broadcasting, and has been assigned the call letters WPA and wave-lengths of 360 meters for broadcasts and 485 meters for weather forecasts.

This station is in charge of a licensed operator, W. H. Pitkin, an ex-Navy man, who has been in the wireless game for a number of years.

A Radio Bonfire

Witnessed by city officials, a squadron of police and members of the fire department, the biggest burning of obsolete radios in the history of the industry was held near City Hall, in Philadelphia, under the auspices of Philco's local dealers, recently.

One thousand radio receivers, adjudged obsolete, went up in flames, after scores of other sets had been saved for the hospitals and the poor of the city. J. C. Marden arranged the big bonfire, with the idea of boosting business in new sets. Also, he said, sale of more new sets would be in keeping with the Hoover prosperity plea.

A representative of the Mayor's office presided at the bonfire, which attracted thousands of spectators during the afternoon of the spectacle, held four blocks from the Municipal Building.

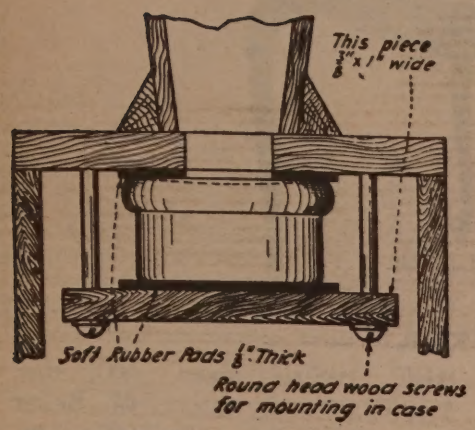
As ninety per cent. of a radio receiving set is metal, a large quantity of parts which remained after the fire was sold for junk and the money realized in this manner was turned over to the Philadelphia Christmas Seal Relief Fund.

Philco dealers make a bonfire of obsolete radio receivers

RADIO NEWS FOR MARCH, 1930

How to Build a Loud Speaker

By PAUL G. WATSON



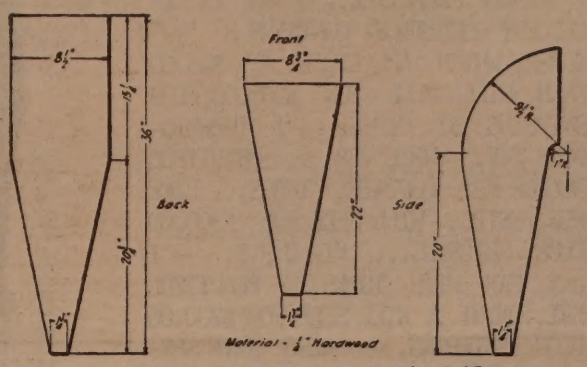
Mounting of the Telephone Receiver in the Base

A GREAT many designs of loud-speaking receivers are on the market today, all with metal horns of some form or other. With practically no exceptions, these devices reproduce music and voice with a harsh, metallic sound similar to old models of the phonograph. The present models of loud speakers are somewhat smaller in size than the wooden horn described in this article. They are designed to be placed on a table or stand, while this wooden horn is of sufficient size to stand on the floor, in the parlor or such places where a finished piece of apparatus is necessary. This horn, as described here, will stand from 36" to 40" high, and requires a floor space about 10" square.

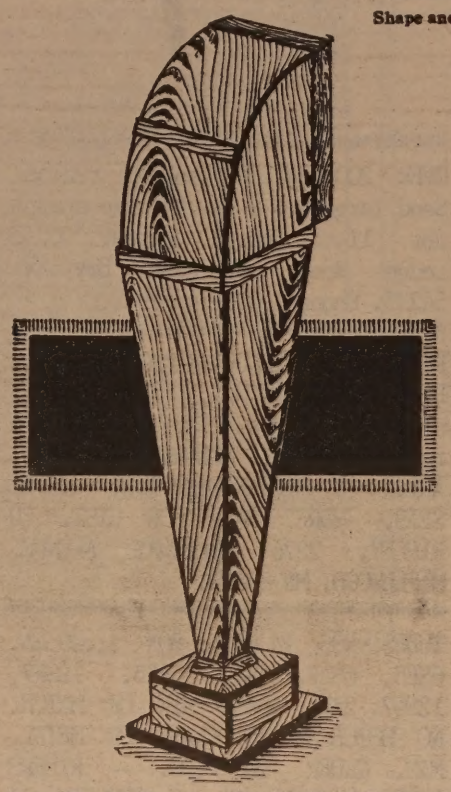
The reproducer unit is a Baldwin type "C" mica diaphragm telephone. It is mounted in the box at the base of the horn, the method of which is shown in the cross sectional drawing of the base. The receiver unit is clamped against the top of the base by a wooden strip, held in place by two long wood screws passing through the strip into the top of the box. Pads of rubber are placed wherever the receiver case touches the base. Pieces of an automobile inner tube will serve this purpose. The phone should be mounted firmly, but not tight enough to crack the case.

The dimensions of the base are of minor importance, as long as the base is large enough to keep the horn upright, a size from 9" to 10" square being about right for the horn described here. The height of this box, or base, should be about six or seven inches.

The hardest feature in construction is the bending of the front and back panels at the horn. The proper way to do this is to boil the parts to be bent in water for several hours and then bend them over a form, on which they are allowed to dry. Much of the tendency to spring out of shape is eliminated by this method of bending. The cleats shown in the assembly drawing prevent the thin material from bending or warping after it has been put in place. They should be fastened with small brass



Shape and Dimensions of the Pieces Needed for the Construction of the Horn



Such a Wooden Horn Amplifies the Sound Produced By a Telephone Receiver, Thus Making a Loud Talker Without a Tiny Sound

wood screws and glue. Only cleats necessary for strengthening the horn are shown in the drawing. A much neater appearing horn can be had by working these cleats into a system of paneling. To bring out the points where strength was needed, the remainder were omitted. The cleat passing under the front panel, having the short bend, should have its upper side rounded to fit this bend, and should be glued and screwed in place. In any case, where cleats are added, it must be on the outside, to give a clear passage for the sound.

The four pieces of the horn are fastened together after bending and drying, with small nails and glue. The joints in the straight section of the horn can be strengthened by the addition of triangular blocks, glued in the corners. A small brass bracket may be placed under the cleats at the large end of the horn to hold the joint together if necessary. The lower end of the horn should be squared off, and is fastened to the base by four triangular wooden blocks mitered around the lower end of the horn. These blocks should be screwed and glued to the horn, and then fastened to the baseboard in a like manner, making a very rigid joint.

The remainder of the base is put together with round head screws and has no complicated details, being only a simple wooden box, made of ½" stock, while the bottom or baseboard is made of ¾" stock. A small hole is drilled in one side for the phone cord to pass, or, if desired, a pair of binding posts can be placed on the top of the base.

I have found this loud speaker to give much clearer signals, when handling strong signals, than any other phone I was able to get. It is particularly desirable to have a clear phone, if voice, such as a radio sermon, is being reproduced, and in this case this loud speaker is fine, to have it talk to an audience.

The finish of the piece can be of any desired color or nature. It is well to give the inside of the horn several coats of good varnish to produce a clear, smooth surface for the sound to travel over.

In concluding this article, it might be well to bring out the principle involved in a loud-speaking receiver, or in fact any horn. There is no amplification in the horn, of any nature. The horn serves as the connecting link between the small volume of air, which vibrates with the receiver diaphragm, and the outside air of the room. Any increase of sound, which might seem to the layman as amplified in the horn, is only the result of a better connection, through the horn, between the small volume of air in the receiver, and that in the room.

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(type 300)
MUSIC MASTER Receiver

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FOR FREE VINTAGE RADIO PARTS FLYER. SEND S.A.S.E. TO: OLDE TYME RADIO COMPANY, 2445 LYTTONSVILLE, MD 20910.

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FOR SALE - DAVENS FREQ. METER, 6 RANGES .2 TO 60KC MDL. 838c WORKS FINE $20.00 PLUS 6 POUNDS. H. P. SQUARE WAVE GENERATOR MDL 210a $20.00 PLUS 20 POUNDS SHIPPING. SAMS C. B. MANUALS VOL. 1 THROUGH 86 $5.00 EA P.PD. SASE FOR LIST. ENGLANDS, 98 MONTAGUE, ZANESVILLE, OH 43701.

****

"DIVORSED" DUMPING OUT EVERYTHING. COLLECTION OF OVER 55 PHONOGRAPHS, most all outside horns, all kinds of records, 30 extra horn parts. Several old radios, one bar radio, cathedral, one RE 45 Victor with manual original condition, several music boxes, one dozen old clocks, pepperbox guns, old TVs. More must sell now. Call days. (503) 474-0815.

****

The above ad is a Charles Seidel out of Grants Pass, Oregon. How many years can a divorce goes on?

****

MOTOROLA —— model 5A5, all chrome dial, page 113, FLICK OF THE SWITCH book. Russ Schoen, R#1, Clintonville, WI 54929.

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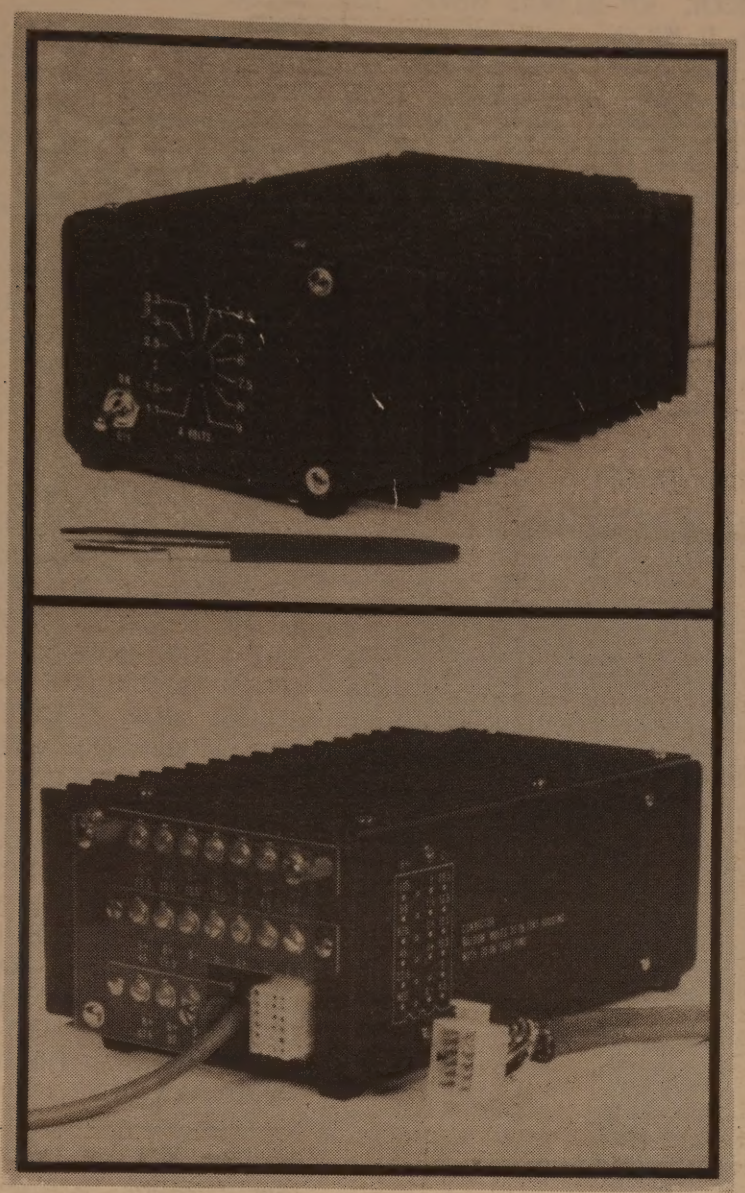
FOR SALE - Radio News: 206 issues, many rare. 58 issues from the 20s, all but 3 of the 30s, rest early 40s. $800 post pd. Send SASE for list. Charles Kirsten, 1373 E.



UNIVERSAL POWER SUPPLY FOR ANTIQUE RADIOS

The Model H10A is a premium quality regulated power supply designed to power over 99% of all battery operated radios. It was developed primarily for the radio collector and is capable of operating all battery sets manufactured between 1920 and the end of the vacuum tube era which was around 1960.

The Model H10A contains three independent and electrically isolated regulated power supplies:

The "A" output provides one of twelve (12) switch selectable outputs: 1.1, 1.5, 2.0, 2.5, 3.0, 3.3, 4.5, 5.0, 6.0, 7.5, 8.0, and 9 volts; at 5 and 6V the H10A is rated at 5 Amp.

The "B" voltages of 22.5, 45, 67.5, 90, and 135V may be used in any combination with a rating of 50 mA.

"C" voltages of 1.5, 3.0, 4.5, 9, 10.5, 13.5, 16.5, and 22.5.

All outputs feature automatic electronic short circuit protection and very low ripple. The H10A operates from 117VAC 50-60HZ. Price is $159.95 UPS prepaid in U.S.A. Canadian customers please add $5.00.

Write or call for Specifications:
Thomas Burgess
Box 9769
Little Rock, Arkansas 72219
(501) 568-1995 Business Phone
(501) 565-1750 Evenings

TV's!

HARRY POSTER

P.O. Box 1883
So. Hack., NJ
07606-USA
(201) 794-9606 / 956-6680

Buying →

1946-1955....$20-100 up Pre-WWII....$500-4000
********** **********
RCA TT5...$800 up #621...$250 up CT1/CT100...$300 up
Predictas:$50-$350 Parts, ads, dealer items needed!
Pilot 3 inch...$100 Pilot magnifier...$75
Dumont (RA-102) Clifton...$350 up Club...$50 up
Philco 48-700...$200 up 48-1000...$75 up
Zenith, etc. Portholes (round viewing screens)...$50-200
Automatic, etc. with built-in magnifier...$150-300
B&K Flying spot TV-Analyst...$25-50

OTHERS...call or write with Make/Model/Condition

Selling →

Dumont (RA-103) Chatham "Doghouse" w/channel 1...$125
Hallicrafters T54 w/channel 1 pushbutton...As is $100
Crosley/Fada/DeWald with 630 chassis...$175 each
RCA 648 PCK w/channel 1, tambour doors...$100
RCA 648 PV. Projection set-wooden beauty...$250

P.S. I've got 26 TV's in the dining room--please buy some!

Altadena Drive, Altadena, CA 91001. (818) 798-9782 eves.

****

RETIRED RADIO TV service man wants to dispose of stock of new parts, meters, tubes, etc. Send large SASE for details. Priced right. N. F. McNALLY, 190 PERRIN AVENUE, PAWTUCKET, RI 02861.

****

$1,000's WEEKLY mailing circulars. Self-addressed, stamped envelope: SLH, Drawer 575, Thorsby, AL 35171-0575.

****

WANTED

WANTED — SMALL TABLE MODEL RADIOS FROM 1930s THROUGH 1950s IN BAKELITE PLASTIC, MIRRORED OR ART DECO STYLE. H. GRINER, 2300 S.W. 81 AVE., MIAMI, FL 33155. PHONE 1 (305) 264-3170 AFTER 6 P.M.

WANTED: PICTURE TUBE TESTER- COMPLETE IN GOOD CONDITION. FRED EMERSON, 627 ILLINOIS AVENUE, ELGIN, IL 60120.

PILOT MODEL L-8 CHASSIS, (2.5V HEATER TUBES), JUNKER O.K. NATIONAL SW-3 COILS OR COIL FORMS. KAPLAN, 14902 84TH AVENUE CT. NW, GIG HARBOR, WA 98335.

PHILCO 15DX CHASSIS AND SPEAKERS or will sell good cabinet for same. 125 FLICK OF SWITCH. Marion Van Hal, 1328 Orchard Dr., Pella, IA 50219.

WANTED: REPAIR on some of my old radios (Philco, Motorola, Majestic, Truetone, etc.). Also need tube tester. D. A. Ehrlich, Box 510, 528 Nagel, Follett, TX 79034.

ORION'S "76-77" CB RADIO TRADE BOOK, NOSTALGIC CB BUFF. GARY CAPPOEN, 18025 NE CHEHALEM DRIVE, NEWBERG, OR 97132.

GRANDFATHER CLOCK RADIOS, FANCY HORNS, 1920s PORTABLES, DeFOREST and KELLOGG TUBE AC SETS. ROSENTHAL, 507 S. MARYLAND AVENUE, WILMINGTON, DE 19804.

WANTED: DYNASCAN 1000 IN STILL GOOD CONDITION. OK ON SMALLER TUBES MISSING. CONDITION ON C.R.T. IF KNOWN?. IT MAY BE REJUVINATED IF NOT COMPLETELY DONE IN, SHOULD HAVE SOME EMISSION, NO SERIOUS SCREEN DEFECTS LIKE HALOS OR SILVERING. KNOWN SUBSTITUTE?. DYNASCAN PICKUP AND RF GENERATOR USING 931-A. GOOD CONDITION PREFERABLE. OK ON MISSING TUBES SAVE PHOTOMULTIPLIER. CBS COLOUR WHEELS, COLOUR SLAVE 15"-17" GOOD CONDITION. COLOUR PHOTOS, SLIDES 16MM COLOUR MOTION PICTURES FROM STUDIO MONITOR OR OTHER. WOULD WELCOME CORRESPONDENCE FROM COLLECTORS OF CBS MATERIAL. D''ARCY BROWNRIGG, P. O. BOX 292, CHELSEA, QUEBEC, CANADA, JOX 1NO.

WANTED: ELECTRON TUBES AND EARLY audio/ stereo equipment. Ex. — Marantz, McIntosh, W.E., etc. Tubes - 50, 250, 350, 450, 45, 245, etc. — plus many W. E. types. Please contact me with anything of interest. Charles Dripps, 4331 Maxson Road, El Monte, CA 91732 (818) 444-7079.

WANTED Crystal set radios, varible condensers, coils, variometers, crystal detectors, carborundum detectors, galena crystals, cat whiskers, headphones, terminals, tap switches, headphones, circuit diagrams, pictures, books, detector holders, coil forms, etc. Starting vintage radio company to supply kits, plans, parts to interest young people in radios instead of just computers. MIDCO, 660 North Dixie Highway, Hollywood, FL 33020.

S.A.S.E. is a self addressed stamped envelope.

WANTED COAXIAL OR TRIAXIAL SPEAKERS of Jensen, Trusonic, Tannoy, Altec 604's. Western Electric equipment (tubes, amps., drivers, horns, speakers, microphones and parts). Radio tubes (50's, 211, 845, 8005) David Yo, P. O. Box 832, Monterey Park, CA 91754. Tel. (818) 576-2642.

EVERYMAN'S GUIDE TO RADIO, VOLUMES two, three and four. (copyright

The Antique Radio Club of America Inc.

James L. Troe
(201) 539-8943

111 Skyline Drive
Morristown, NJ 07960

March 25, 1986

NEWS RELEASE

FOR IMMEDIATE RELEASE

ANTIQUE RADIO COLLECTORS AND HISTORIANS TO HOLD ANNUAL CONVENTION

The Antique Radio Club of America (ARCA) will hold a convention at Louisville, Kentucky during June 11 thru 14, 1986 to which all interested people are invited.

The Club has about 1000 members who collect and restore antique wireless and radio equipment and who study and record the history of early radio. The members collect all types of radio and related equipment and literature from before World War I to sets of the forties and fifties. Many of the members are amateur radio operators who collect early "Ham Radio" equipment from early crystal receivers and spark transmitters to sets of the sixties.

Once a year ARCA holds a national convention. During this years convention there will be speakers, tours of radio collections, and tours of the Louisville area. As usual, there will be a program for the ladies. Major events will be a massive flea market, where the collectors will be looking to buy or sell sets, parts, tubes, and associated literature! There will also be a large auction of similar equipment.

The recreational and vacation opportunities in the Louisville area provide endless choices for those family members whose interests do not include "old radios".

Information on the convention and ARCA membership can be obtained by writing to ARCA, 81 Steeplechase Road, Devon, PA, 19333 or calling 215-688-2976.

J. L. Troe

J.L.Troe
President

OLDE TYME RADIO CO.

Need hard to find Olde Tyme Radio parts such as:

- *Vintage Tubes
- *AK Style Battery Cable
- *Olde Tyme Hookup Wire
- *Brown Silk Type Power Cord
- *Audio Transformers
- *Power Transformers
- *Headphones
- *Headphones & Speaker Cords
- *ANT, RF, OSC, IF Coils
- *Speaker Grill Cloth
- *Pilot Lamps
- *XTAL Set Parts

Also can provide reprints of the following Olde Tyme Radio publications:

- *Atwater Kent Instructors Manual
- *Atwater Kent Equipment Catalog
- *Radiola IIIA Manual

And much, much more, also as a convenience to you, we can even provide copies of those ever popular books 'Vintage Radio & Flick of the Switch' in soft covers. Schematics of many radios and TV sets are also available. For free flyer send SASE to Olde Tyme Radio Company, 2445 Lyttonsville Road, Silver Spring, MD 20910.

Wish to reach us by phone? The number is 301-585-8776.

Please call between 10:00 a.m. and 10:00 p.m. est.

1926-1927) Brian Rhodes, 90 Francis Avenue, Stanhope, NJ 07874.

NORDEN HAUCK SUPER 10 cabinet, Norden Hauck R.F. coil A-6 for super 10. Federal 61 cabinet. Philco Predicta. J. Cunningham, 675 W. Ardmore, Roselle, IL 60172.

TV'S WANTED! pre 1955, 12" or smaller round tube (pot holes), Pilots, Philcos "swivel head," magnifier color wheels, early color sets, RCA CT-100. And, of course pre war sets! Buying bakelite and plastic radios, novelty sets, rep-woods, etc. B&K TV analyst wanted. Harry Poster, Box 1883, South Hack., NJ 07606. (201) 794-9606/ 956-6680.

HALLICRAFTER SX-71 receiver, Roy Schmitt, Rt. 1, Box 800 Lot 84, Converse, TX 78109, (512) 658-2669.

CATHEDRAL RADIOS, MUST BE NICE AND WORKING CONDITION. WILL PAY TOP DOLLAR. ALSO WANT OTHER UNUSUAL AC RADIOS. HAROLD PERKINS, 4468 SUN VALLEY DRIVE, LAS VEGAS, NV 89121.

WANTED: INSTRUCTION MANUAL FOR E.I.C.O. VOLT - OHM METER - MODEL 249, SERIAL # 8141, XEROX COPY O.K. M. J. POWELL, BOX 72, HOPE, ND 58046.

WANTED. PARTS FOR GREBE CR 9. All small parts, no cabinet or panel. Walter Reichert, 217 East Lyons Street, Marissa, IL 62257.

STRONG BUYER! Wanted colored "bakelite" radios. All manufacturers, also mirrored radios! Mark Honea, 13201 N.W. 81st, Parkville, MO 64152. (816) 891-2441.

WANTED: DOES ANYONE HAVE A DeFOREST PROFESSIONAL DETECTOR BOX? NEED DIMENSIONS FOR PANEL PARTS, PLACEMENT AND LETTERING INFORMATION. ROSS SMITH, 1133 STRONG AVENUE, ELKHART, IN 46514.

WANTED: SUPREME BEITMAN MANUALS R-17, R-18, TV-6, TV-15, TV-19, TV-26, TV-27, TV-29, Craig Larson, 2122 45th Avenue, Minneapolis, MN 55421.

PARTS CHASSIS or good power transformer for A.K. model 82, Marion Van Hal, 1328 Orchard Drive, Pella, IA 50219. (515) 628-2347.

WANTED: COLORFUL BAKELITE RADIOS BY ALL MANUFACTURERS! Also mirrored and novelty radios. Mark, 13201 N.W. 81st, KC, MO 64152. (816) 891-2441.

WANTED: High voltage electrostatic volt meter. Send specifics to TCBA, RD3 Box 181, Glens Falls, NY 12801.

WANTED — ORION'S "76-77" CB RADIO TRADE BOOK, NOSTALGIC CB BUFF. GARY CAPPOEN, 18025 NE CHEHALEM DRIVE, NEWBURG, OR 97132.

TV COLLECTOR WANTS: PRE-1955 TV'S, PORT HOLES, COLOR WHEELS. TV RIDERS INDEX (TO #25?). PRE 1950 TV BOOKS, 1930'S "TV NEWS". ALSO WNAT 1940-1960 BAKELITE AND PLASTIC RADIOS! NEED NOT BE CATALIN— IF THEY LOOK INTERESTING, I'D LIKE THEM! PLUS CHAIRSIDES, PRETTY CONSOLES, REP WOODS. HARRY POSTER, (201) 794-9606/ 956-6680.

WANTED — 16TT4 or equivalent piture tube, Jody Darby, 119 Wilbon Circle, Simpsonville, SC 29681.

WANTED — VOLTMETER that plugs into front of Radiola 20. Glen McCrory, 924 West Sixth, Storm Lake IA 50588.

WANTED: 12WP4, 12LP4 & 12KP4 CRT's. Craig Larsen, 2122 45th Avenue N.E., Minneapolis, MN 55421. Tel. (612) 789-5975.

WANTED —— RCA CREDENZA'S, Edison windups - speaker systems and components, JBL Hartfield, Paragons- Altec Laguna, Magnificent, 515A/B, 288B/C, 604B/C/D/E, E.V. Patricians, Tannoy Autograph, GRF - Red/ Silver/ Gold, Jensen G610, Western Electric theatre equipment, speakers, drivers, horns, electron tubes, mixers, x-formers, x-overs, tubes, round top 45, 50 - W.E. 252A, 300A/B, 350B, etc. Charles Dripps, 4331 Maxson Road, El Monte, CA 91732. (818) 444-7079.

WANTED: PICTURE TUBES - 3KP4 - 7JP4 - 10BP4 - 10FP4 —— FRED EMERSOM, 627 ILLINOIS AVENUE, ELGIN, IL 60120.

WANTED —— GRANDFATHER CLOCK RADIO and Radiola IV. Gordon Wilson, 11108 - 50 Avenue, Edmonton, Alberta, CAnada, T6H 0H9

WANTED: PRE-1920 POPULAR ELECIRICITY, Electrician Mechanic, Modern Electrics, World's Advance, etc. wireless books, want list available. TCBA, RD3, Box 181, Glens Falls, NY 12801.

THE HORN SPEAKER

PHOTO AD

SELLS

Box 53012, Dallas, TX 75253 **THE EASY INEXPENSIVE WAY**

Your Name _____

Street Address _____

City _____ State _____ Zip _____

Telephone number _____

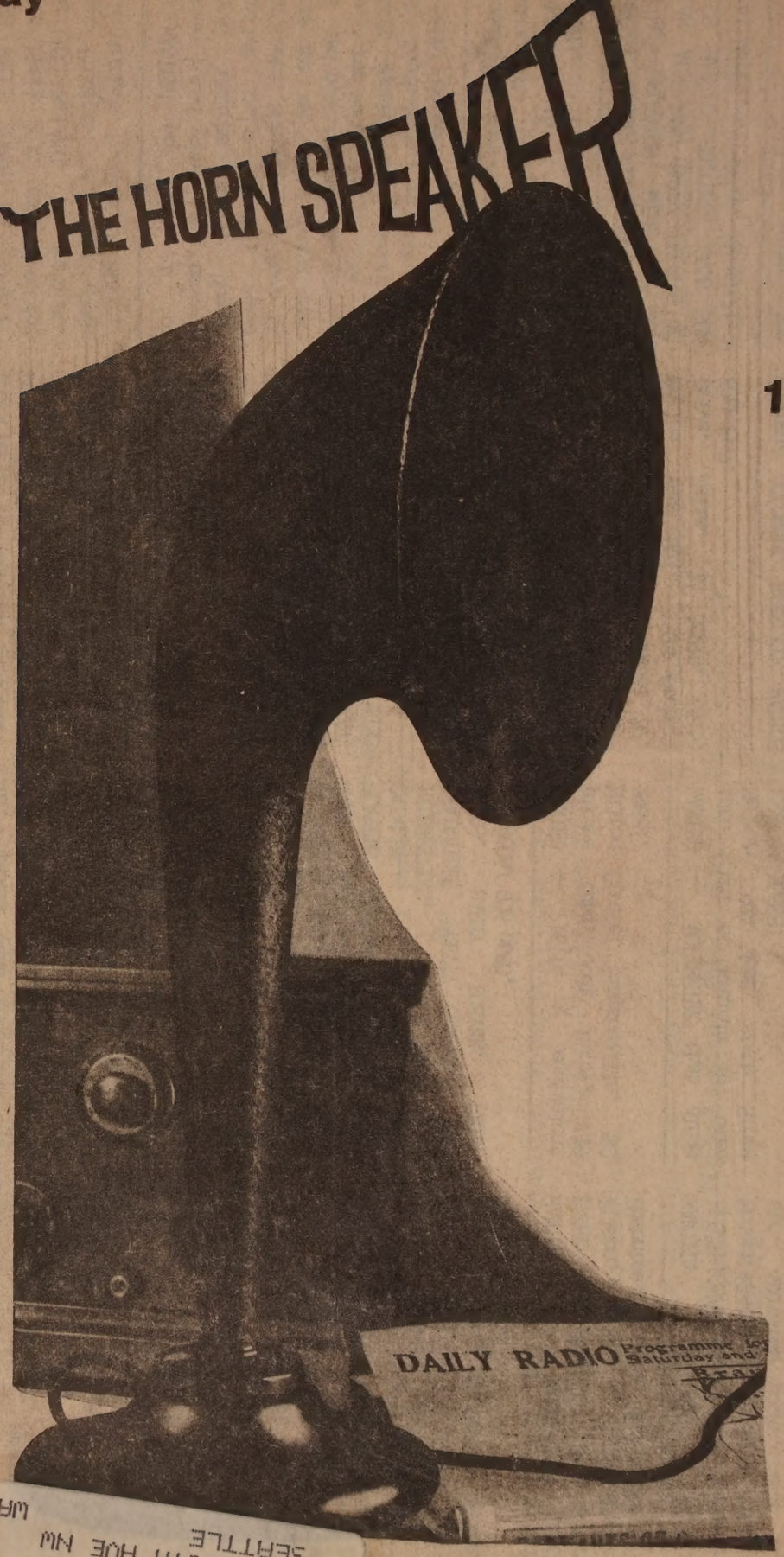
FIRST 20 WORDS FREE

Classified ad only 15 cents per word.
Photo ad only $5.00 extra.

May

THE HORN SPEAKER

1986



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SEATTLE
WA -98107

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